Why Did the Titanic Sink?

High speeds, a fatal wrong turn, weather conditions, a dismissed iceberg warning and lack of binoculars and lifeboats all contributed to one of the worst maritime tragedies.

An estimated 100,000 people gathered at the dock in Belfast, Ireland, on March 31, 1911, to watch the launch of the Royal Mail Ship (RMS) Titanic. Considered an “unsinkable” ship, the Titanic was the largest and most luxurious cruise liner of its day, measuring more than 882 feet long from prow to stern—the length of four city blocks—and 175 feet high, and weighing more than 46,000 tons. It boasted state-of-the-art technology, including a sophisticated electrical control panel, four elevators and an advanced wireless communications system that could transmit Morse Code. Despite these amenities, the fabled ship would never reach its destination.

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On the night of April 14, 1912, just four days after leaving Southampton, England on its maiden voyage to New York, the Titanic struck an iceberg off the coast of Newfoundland and sank. Now, more than a century after the Titanic went down, experts are still debating the possible causes of this historic disaster that took the lives of more than 1,500 passengers and crew. Most of them agree that only a combination of circumstances can fully explain what doomed the supposedly unsinkable ship.

It was traveling too fast.

From the beginning, some blamed the Titanic’s skipper, Captain E.J. Smith, for sailing the massive ship at such a high speed (22 knots) through the iceberg-heavy waters of the North Atlantic. Some believed Smith was trying to better the crossing time of Titanic’s White Star sister ship, the Olympic. But in a 2004 paper, engineer Robert Essenhigh speculated that efforts to control a fire in one of the ship’s coal bunkers could have explained why the Titanic was sailing at full speed.

The wireless radio operator dismissed a key iceberg warning.

The Titanic had received multiple radio reports of ice from other ships throughout the day. Less than an hour before it hit the iceberg, the ship Californian radioed to say it had been stopped by

dense field ice. But as the warning didn't begin with the prefix "MSG" (Master's Service Gram), which would have required the captain to directly acknowledge receiving the message, the Titanic's radio operator Jack Phillips considered the other ship's warning non-urgent, and didn't pass it along.

It may have taken a fatal wrong turn.

According to a claim made in 2010 by Louise Patten (the granddaughter of the most senior Titanic officer to survive, Charles Lightoller), one of the ship's crewmembers panicked after hearing the order to turn "hard-a-starboard" in order to avoid the approaching iceberg. Because ships at the time operated on two different steering order systems, he became confused and turned the wrong way—directly toward the ice. Patten included this version of events, which she said she heard from her grandmother after Lightoller's death, in her fictionalized account of the Titanic disaster, *Good as Gold*.

Some of the rivets that held the ship together may have been weak.

In 1985, when an American-French expedition finally located the historic wreck, investigators discovered that, contrary to earlier findings, the Titanic had not sunk intact after hitting the iceberg but had broken apart on the ocean's surface. Materials scientists Tim Foecke and Jennifer Hooper McCarty have cast blame on some of the more than 3 million rivets that held the hull's steel plates together. They examined rivets brought up from the wreck and found them to contain a high concentration of "slag," a smelting residue that can make metal split apart. This may have weakened the part of the Titanic's hull that hit the iceberg, causing it to break apart upon impact.

Mirages and hazy horizons were created by weather conditions.

Two studies done around the time of the 100th anniversary of the Titanic disaster in 2012 suggested that nature played a key role in the ship's fate. The first argued that the Earth came unusually close to both the moon and the sun that year, increasing their gravitational pull on the ocean and producing record tides, which caused increased amounts of floating ice in the North Atlantic around the time of the sinking.

The second study, by British historian Tim Maltin, claimed that atmospheric conditions on the night of the disaster might have caused a phenomenon called super refraction. This bending of light could have created mirages, or optical illusions, that prevented the Titanic's lookouts from seeing the iceberg clearly. It also would have made the Titanic appear closer, and smaller, to the nearby ship the Californian, causing its crew to assume it was a different ship without a radio, preventing them from attempting to communicate. From their vantage point, and with these hazy conditions, when the Titanic started to sink, the Californian's crew would have thought it was merely sailing away.

The lookouts had no binoculars.

Second officer David Blair, who held the key to the Titanic's store of binoculars in his pocket, was transferred off the ship before it left for its maiden voyage from Southampton and forgot to hand over the key to the officer who replaced him. At a later inquiry into the sinking, a lookout on the Titanic said binoculars might have helped them spot and dodge the iceberg in time. Blair kept the key as a memento of his near-miss; it was auctioned off in 2007 and fetched some £90,000.

There weren't enough lifeboats.

No matter what caused the Titanic to sink, such a massive loss of life could probably have been avoided if the ship had carried sufficient lifeboats for its passengers and crew. But the White Star liner left Southampton with only 20 lifeboats—four more than the legal minimum, but only enough to hold a little more than half the number of people on board the ship.

Though Maurice Clarke, the civil servant who inspected the Titanic in Southampton, recommended it carry 50 percent more lifeboats, his handwritten notes at the time later revealed that he felt his job would be threatened if he did not give the famous ship the go-ahead to sail. Due to the chaos that ensued after the Titanic struck an iceberg, the 20 lifeboats departed the ship with some 400 empty seats, leaving more than 1,500 people to perish in the frigid ocean waters.

VOCABULARY

1. **Maiden voyage**
   The first journey made by a ship after it has been officially launched.
2. **RMS (Royal Mail Ship)**
   A ship that carries mail under contract to the British Royal Mail; it also refers to ships like the Titanic that carried mail and passengers.
3. **Prow**
   The front end (bow) of a ship.
4. **Morse Code**
   A system of communication using a series of dots and dashes to represent letters and numbers, often transmitted by sound or light.
5. **Iceberg**
   A large floating mass of ice detached from a glacier or ice sheet and carried out to sea.
6. **Knot**
   A unit of speed equal to one nautical mile (1.852 km) per hour, used in maritime and aviation contexts.
7. **Wireless operator**
   A person responsible for sending and receiving messages via radio, especially on a ship.
8. **Super refraction**
   An atmospheric condition where light bends unusually, creating visual distortions such as mirages.
9. **Lookout**
   A person assigned to watch for danger, such as obstacles or other ships, especially at sea.
10. **Binoculars**
    An optical instrument with two lenses used for viewing distant objects.
11. **Rivets**
    Metal pins used to hold pieces of metal together, often used in shipbuilding.

12. **Slag**
    A byproduct of smelting metal that can weaken the structural integrity of the metal it remains in.
13. **Hull**
    The main body of a ship, including the bottom, sides, and deck but not the masts, superstructure, or rigging.
14. **Mirage**
    An optical illusion caused by atmospheric conditions, making distant objects appear distorted or displaced.
15. **Lifeboat**
    A small boat carried on a ship, used for emergency evacuation in case of disaster.